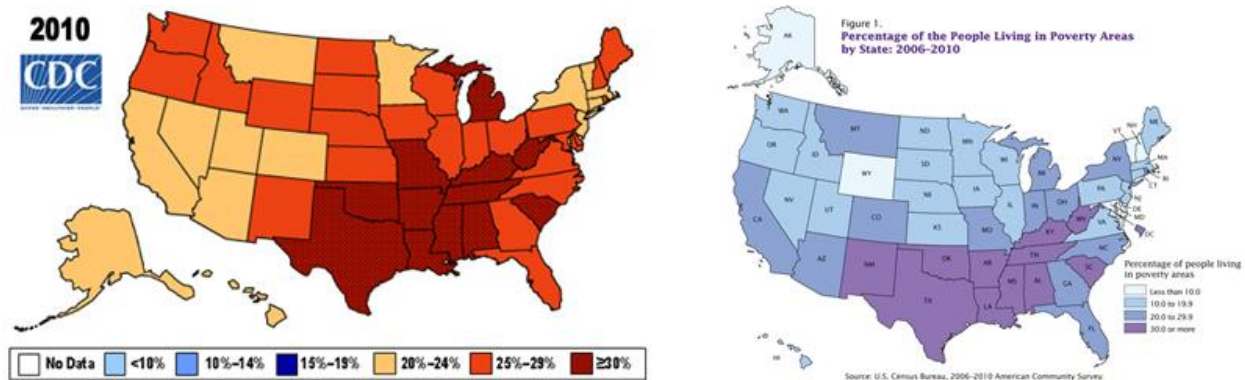


Thomas Kleiven

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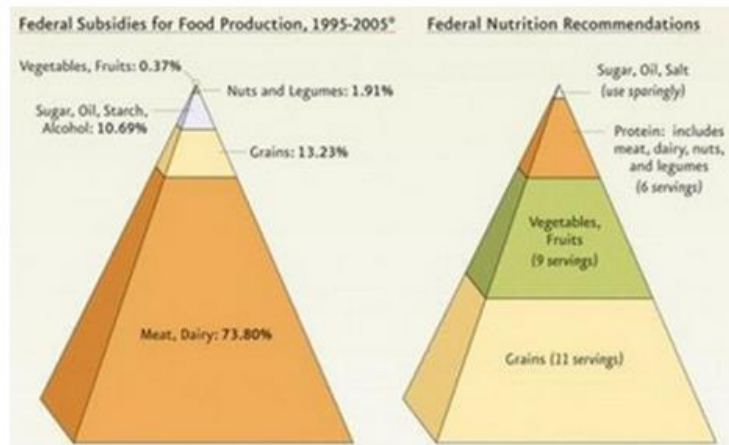
Matrix Posts

Post #1: Nutrition, Health, and Food Industry Subsidies



\$2,200 more per year

3x more \$\$\$ per calorie



Obesity is one of the [largest health problems facing America](#), and affects over 1/3rd of all Americans. According to the CDC, obesity can lead to heart disease, stroke, diabetes, and certain types of cancer – many of the leading causes of preventable death.

Additionally, studies have shown that obesity is [linked to income, but strongly linked to education level](#). This suggests at a problem of economic access to healthy foods, but the issue is far more complex than simply stating that healthy foods are just more expensive than “junk food”. The economic barriers to eating healthy are very real, and are present in developed countries across the globe. Worldwide, eating healthy meals instead of unhealthy meals costs an [additional \\$1.50 per person, per day](#). This leads to a food bill increase of \$2,200 per year for a family of four. Additionally, the price premium of

healthy foods has [consistently increased since 2002](#). However, the economic problem is not as simple as it seems: only 14% of the profits from selling a food item go to the producer, so distributors, retailers, and other parties make up 86% of the profits. This shows that other parties have strong power in how to price the items, and can take advantage of the strong demand for healthy options by increasing the final price. At the producer level, the economic equilibrium is upset by the omnipresence of government subsidies. [Subsidies are common in the United States](#), as well as in the European Union, and are designed to protect agriculture jobs and keep food prices low. These subsidies are [not distributed evenly throughout the industry](#): meat and dairy make up 74% of all subsidies, with fruits and vegetables comprising only 0.4%. At a basic level, this makes fruits and vegetables ([which Americans do not eat enough of](#)) relatively more expensive than subsidized meat, dairy, and grains (which Americans eat too much of). As a result, these subsidies have been shown to both [lower overall health in developed countries, and harm food production in developing countries](#). As an example, the subsidies of the dairy industry in the UK are shown to promote overproduction, leading to an increase in storable dairy products such as milk powder and butter. The cheap butter can then be sold in bulk to pastry manufacturers, where the subsidy allows processed cakes and snacks to be sold at a low price. Items like the milk powder are exported to developing countries that are in need of food products. This may seem like a positive, but in the long run it [discourages the development of a domestic food industry](#) in countries like the Dominican Republic, Kenya, India, and Jamaica. Subsidies fail to increase food security in foreign nations and domestically – Nicholas Jones of Cambridge University argues that food subsidies decrease availability of healthy foods, citing the definition of food security as “the physical and economic access to sufficient, nutritionally adequate and safe food.” The government subsidies can price a segment of the population out of being able to afford nutritionally adequate foods, and is a major contributor to obesity in developed nations.

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Elinder, L. S. "Obesity, Hunger, And Agriculture: The Damaging Role Of Subsidies." *BMJ* (2005): 1333-336.

Rao, M., A. Afshin, G. Singh, and D. Mozaffarian. "Do Healthier Foods and Diet Patterns Cost More than Less Healthy Options? A Systematic Review and Meta-analysis." *BMJ Open* (2013): E004277.

Jones NRV, Conklin AI, Suhrcke M, Monsivais P (2014) The Growing Price Gap between More and Less Healthy Foods: Analysis of a Novel Longitudinal UK Dataset. *PLoS ONE* 9(10): e109343. doi:10.1371/journal.pone.0109343

Reference Annotations:

1. *Obesity, Hunger, and Agriculture: The Damaging Role of Subsidies*

Elinder, L. S. "Obesity, Hunger, And Agriculture: The Damaging Role Of Subsidies." *BMJ* (2005): 1333-336.

Liselotte Schäfer Elinder was an associate professor at the Swedish National Institute of Public Health in Stockholm, Sweden at the time of this publication. She worked at the National Institute of Public Health since 1998, and researches in nutrition, physical activity, and obesity, especially how they relate to health impact assessments, policy development, and agricultural policy.

The main argument of the text is that government subsidies in the United States and in the European Union are encouraging overproduction of food, which negatively impacts the health of people around the globe.

This argument is supported through examples that illustrate negative effects of subsidies on global health. One example cited shows how subsidies of the milk industry in the European Union support overproduction and hurt European health and industries in developing economies. A perceived positive of food subsidies, cheaper food prices, is shown to have unforeseen negative consequences to populations most impacted by malnutrition. The author cites studies that show food prices are at the lowest levels in history, and sufficient calories are available to the majority of people in Western nations. The rampant malnutrition in undeveloped nations is attributed in part to lack of access to food, which can be worsened by cheap exports of subsidized food. The author shows how overproduction of food throws off the economic equilibrium of food pricing and makes it very easy to over consume subsidized products such as butter.

Quotes that capture the critical import of the text:

“Several studies have suggested that overproduction of food followed by excessive consumption is the prime cause of the increase in body mass index in the United States and elsewhere.”

“Export subsidies for milk products undermine the milk sector in many developing countries such as the Dominican Republic, Kenya, India, and Jamaica.”

“However, the main reason for hunger is not a lack of global food supplies but lack of access to food, conflicts, natural and human disasters, animal and plant pests, and unfair international trade in combination with a lack of political will to eradicate it.”

The article supports my research focus by illustrating the tremendous impact governmental policy can have on the food industry. Additionally, it chronicles the links between food company lobby groups, government policy makers, and nutritional consumption habits.

In my post I have referenced the example of the harm to domestic production in developing economies caused by subsidies in developed nations. Additionally, I included the counterargument given in the article to the common belief that subsidies protect against malnutrition in developed nations.

2. Do Healthier Foods and Diet Patterns Cost More than Less Healthy Options?

Rao, M., A. Afshin, G. Singh, and D. Mozaffarian. "Do Healthier Foods and Diet Patterns Cost More than Less Healthy Options? A Systematic Review and Meta-analysis." *BMJ Open* (2013): E004277.

Lead author Mayuree Rao is affiliated with the Warren Alpert Medical School of Brown University, Providence Rhode Island and with the Harvard School of Public Health in Boston, Massachusetts. Co-authors Ashkan Afshin, Gitanjali Singh, and Dariush Mozaffarian are also affiliated with the Harvard School of Public Health. The study was funded through the Genes and Environment Initiative grant from Harvard University, as well as through grants from several national health organizations. The interests of the authors include prevention of disease, promotion of health diets, and public policy related to healthy lifestyles.

The main argument of the article is that unhealthy foods and diets are definitively cheaper than healthy choices, which can cause financial barriers to healthy eating.

The hypothesis of the researchers was tested using an analysis of data from a MEDLINE study from 2010-2011 on food prices. Each food option was rated by the researchers on a scale of 1-10 on how healthy of a choice it is. The study made sure to take into account the overall health difference when evaluating choices, weighting the choice of a salad over fast food higher than the choice of a reduced fat cookie over a regular cookie. The researchers also included data from many countries including the United States, Canada, South Africa, New Zealand, and the European Union.

Quotes that capture the critical import of the text:

“The findings from this systematic review and meta-analysis provide the most robust evidence until today on price differences of healthier versus less healthy foods and diet patterns.”

“According to the USDA, the farm share of proceeds of a \$1 expenditure on domestically produced food in the USA is 14.1 cents (in 2010), suggesting that

final retail prices are determined largely by other industries and procedures in the food supply chain.”

“The price difference—about \$1.50/day—represents the price difference per person for consuming a much healthier versus much less healthy overall diet, for example, comparing Mediterranean-type diets rich in fruits, vegetables, fish and nuts versus diets rich in processed foods, meats and refined grains.”

The article’s argument supports my research by quantifying the extent of financial barriers to healthy eating. Additionally, it illustrates the global reach of this problem by using data from countries all over the world.

The finds of the article that eating a healthier diet costs on average \$1.50 per day per person. I used this to estimate an increased food bill of ~ \$2,200 per year to feed a family of four a healthier diet. I also used the statistics about how much the producers profit on the sale of domestic food.

3. The Growing Price Gap between More and Less Healthy Foods

Jones NRV, Conklin AI, Suhrcke M, Monsivais P (2014) The Growing Price Gap between More and Less Healthy Foods: Analysis of a Novel Longitudinal UK Dataset. PLoS ONE 9(10): e109343. doi:10.1371/journal.pone.0109343

Lead author Nicholas RV Jones is affiliated with the University of Cambridge School of Clinical Medicine. Co-authors Annalijn Conklin, Marc Suhrcke, and Pablo Monsivais are colleagues of Jones at Cambridge University. The researcher’s main interests are in economics, public policy, and investments in health and development.

The main argument of the article is that healthy foods are not only more expensive than less healthy options, but that the gap has been growing over the past decade. The authors argue that this negative trend is exacerbating social inequalities.

The authors examined data on food and beverage prices from the UK Consumer Price Index and nutritional data from the UK Department of Health’s National Diet and Nutrition Survey to produce their results. The authors categorized healthy and less healthy foods using a nutrient profiling model developed by the Food Standards Agency. After performing the statistical analysis, the authors looked into the sensitivity of their findings, and found no bias or strong dependence on broad categorizations.

Quotes that capture the critical import of the text:

“The price of more healthy foods was consistently greater than that of less healthy foods over the period 2002–2012, and that the absolute price gap between healthy and less healthy foods has grown over this period.”

“In the UK it may be the case that food prices are heavily influenced by certain features of the Common Agricultural Policy (CAP) which intervenes in food markets to subsidise the production of certain goods, including grains, dairy products, oils and sugar.”

“The standard definition of food security is that people should have physical and economic access to ‘sufficient, nutritionally adequate and safe food’, meaning that if economic constraints are gradually forcing people to replace more healthy foods with less healthy ones, they are becoming increasingly exposed to the risk of food insecurity.”

The paper supports my research through providing evidence that the sustainability problem I am studying has been plaguing society for over 10 years, and has only gotten worse since 2002. The statistical rigor of the study provides hard numbers about the extent of the problems under study.

The study’s finding that the gap in the cost between healthy and less healthy food items has been increasing since 2002 is used in my post to document the history of this sustainability problem. The example of subsidies in the UK upsetting the balance between the cost of fruits, vegetables, grains, and dairy. Is included in my post.

Post #2: American Culture and Offshoring Externalities



Americans make up only 5% of the global population, yet consume [more than 20% of the world's energy](#). Trash and consumer spending in the United States also outpace the rest of the world, as the American culture of excess and consumerism thrives. All of this spending creates a tremendous amount of waste – nearly 5 pounds of trash, [per person, per day](#). However, this figure would be much higher if the products Americans use and then throw away were produced inside the United States. As developed nations are turning more and more to developing nations for manufacturing and labor-intensive processes, the negative externalities of production are offshored to poorer countries. China, specifically, has been able to grow at [exponential rates](#) from the 1980s to today. China's manufacture for export strategy has been at the heart of their country's economic miracle: China now accounts for nearly [20% of the value of all imports](#) into the United States, and has quickly become the world's second largest economy. However, this growth has come at a devastating cost to the country's environment and people. Researchers from the MIT Program on the Science and Policy of Global Change found that air pollution alone is caused China [\\$122 billion in welfare](#), based on lost work due to serious illness and death, decreased productivity due to minor illness, and

healthcare expenses. According to the authors, these horrible impacts could be reversed by setting strict pollution caps that would drop the expense by over one-third. However, the Chinese government is incentivized to keep environmental regulations lax by the desire to continue to attract foreign direct investment into the Chinese economy. In a [study by the US International Trade Commission](#) into the viability of Chinese “pollution havens,” the researchers found that although the pollution haven hypothesis does not have an expansive reach, lenient pollution regulations can attract industrial investment. The study found that for investment from Western countries, the state of environmental regulation was not a significant influence on the choice of plant location. The authors hypothesized that this was due to the existing technological advantages that made it easy to produce below even the most stringent pollution standards in China. However, just because the differences in pollution restrictions did not force decision making does not mean that loose environmental laws in China as a whole did not influence the decision to move production to China. China’s notoriously outdated environmental laws were only just [recently updated, after 25 years](#). American companies contribute to this unsustainability by using China as a means for cheap production to fuel American consumerist lifestyles. A review of the corporate social responsibilities of companies in China showed [a mismatch between Wal-Mart’s China operations and Wal-Mart’s corporate governance goals](#). Wal-Mart’s broad corporate messages of fair competition, anti-corruption, ethical standards, diversity of the supplier base and workforce, and the environment were treated much more seriously in board rooms in corporate headquarters than on the ground in China. However, in spite of these sustainability challenges, consumers can have a powerful impact on the decisions companies like Wal-Mart make. Largely due to public backlash in the United States, Wal-Mart China has taken several steps to treat workers and the environment more fairly, the same study notes.

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- Matus, Kira, Kyung-Min Nam, Noelle E. Selin, Lok N. Lamsal, John M. Reilly, and Sergey Paltsev. "Health Damages From Air Pollution In China." *Global Environmental Change*(2011).
- Kolk, Ans, Pan Hong, and Willemijn Van Dolen. "Corporate Social Responsibility in China: An Analysis of Domestic and Foreign Retailers' Sustainability Dimensions." *Business Strategy and the Environment* (2010).
- Dean, Judith, Mary Lovely, and Hua Wang. "Foreign Direct Investment and Pollution Havens: Evaluating the Evidence from China." *US International Trade Commission, Office of Economics* (2004).

Reference Annotations:

1. *Health Damages from Air Pollution in China*

Matus, Kira, Kyung-Min Nam, Noelle E. Selin, Lok N. Lamsal, John M. Reilly, and Sergey Paltsev. "Health Damages From Air Pollution In China." *Global Environmental Change*(2011)

The lead authors of this publication are Kira Matus, of the London School of Economics, and Kyung-Min Nam, of the Massachusetts Institute of Technology. Additional authors Noelle Selin, John Reilly, and Sergey Paltsev are affiliated with MIT Program on the Science and Policy of Global Change. Co-author Lok Lamsal is affiliated with the Department of Atmospheric Science at Dalhousie University, Halifax, Nova Scotia. Kira Matus researches in sustainability issues, green production systems, and environmental regulation. Kyung-Min Nam's research is focused on air pollution health impacts and urban growth modeling.

The main argument of the paper is that despite efforts by the Chinese government to improve the overall air quality, the marginal welfare impact to the economy increased to \$112 billion in 2005. This is due to increased urbanization, where the lower overall air pollution levels are impacting a greater number of people. This economic impact is manifested in a variety of ways, from early death of workers to increased health services needs to time required to recover from illness.

The author's analysis uses several air quality metrics including ozone levels, fine particle concentration, and carbon dioxide levels. From these metrics, the authors were able to calculate the number of illnesses, deaths, and sick days attributable to these pollutants. Each illness or sick day was given an economic cost, for example, one day of restricted activity for one person cost the Chinese economy \$2.32. Following this analysis, the increase in welfare spending needed to combat pollution effects could be identified. A sensitivity analysis was then performed to check dependence on input parameters.

Quotes that capture the critical import of the text:

"Air pollution in China has created a substantial burden to its economy, though its magnitude in relative terms has gradually declined."

"If China enforced air quality control measures with an annual goal of 70 $\mu\text{g}/\text{m}^3$ for ozone and 20 $\mu\text{g}/\text{m}^3$ for PM₁₀, it would have reaped an increasing benefit, growing from an estimated US\$13 billion in 1975 to an estimated US\$47 billion in 2005 (5% to 19% of historical levels) in terms of consumption or US\$18 billion to US\$80 billion (4% to 12% of 21 historical levels) in terms of welfare."

“Our estimate of health damage from pollution in 1995 was loss of US\$64 billion in GDP (9%), while that of World Bank (1997) was US\$34 billion (5%). We end up with higher estimates, primarily because the World Bank studies apply ER functions and valuation tables in a static way, and thus fail to capture the cumulative dimensions of interactions among pollution, human health, and the economy.”

This paper supports my research focus by quantifying an economic impact of China’s environmental policies. It clearly compares the cost of externalities China incurs while growing to the benefit of growth in exports. Additionally, it highlights the unprecedented human and environmental disaster taking place in modern China.

The main finding of the report, that in 2005 air pollution alone cost China \$122 billion in welfare spending, is used in my report. Additionally, the findings about the drastic improvements that could be made to the welfare of China were included to illustrate the ability of China to recover.

2. Corporate Social Responsibility in China

Kolk, Ans, Pan Hong, and Willemijn Van Dolen. "Corporate Social Responsibility in China: An Analysis of Domestic and Foreign Retailers' Sustainability Dimensions." *Business Strategy and the Environment* (2010).

Lead author Ans Kolk and co-author Willemijn van Dolen are from the University of Amsterdam Business School in The Netherlands. Co-author Pan Hong is affiliated with the Business School of Jilin University, China. Ans Kolk is an expert in corporate social responsibility and sustainability relating to international business. She also researches in poverty and development, subsistence markets, and accountability.

The authors’ argument is supported by case studies examining several corporations who operate in China consisting of Wal-Mart, French retailer Carrefour, East Asian retailers Parkson and Lotus, and four domestic Chinese companies. The corporate social responsibility messaging of each company is examined and compared to the company’s overall resources and international corporate message. Additionally, the level of community activity and charitable giving is analyzed.

Quotes that capture the critical import of the text:

“Although there have been allegations about CSR as being part of a “foreign scheme to price China out of the cheap labour market”, or as international interference more generally, in view of the fact that it originated from outside China, mainly driven by the Western anti-sweatshop campaigns.”

“Comparing Wal-Mart China with corporate, especially the society aspects are more extensively covered in the latter, including fair competition, anti-corruption and ethical standards, and diversity of the supplier base and workforce. The environment also seems a source of greater concern at the corporate level, as does organic food.”

“The chairman of the European Union Chamber of Commerce in China noted that ‘In the environmental sector we see Chinese legislation that is even stricter than European law, yet implementation is sometimes non-existent.’”

The text supports my research focus by highlighting the actions of international retailers in China. Carrefour and to a lesser extent Wal-Mart are shown to have different social agendas when operating in China and when operating in their home markets.

The example of Carrefour is used in the post to illustrate a company who ingrained sustainability at the core of its corporate model but abandoned it in regards to business in China. I also included the example of Wal-Mart gradually updating to become more sustainable based on pressure from the United States to show how consumers can impact the supply chain to force retailers to make more sustainable choices.

3. Foreign Direct Investment and Pollution Havens

Dean, Judith, Mary Lovely, and Hua Wang. "Foreign Direct Investment and Pollution Havens: Evaluating the Evidence from China." *US International Trade Commission, Office of Economics* (2004).

Lead author Judith Dean works in the Office of Economics at the US International Trade Commission. Co-author Mary Lovely works in the Department of Economics at Syracuse University, and researcher Hua Wang works at the Development Research Group of the World Bank. Judith Dean is now at Brandies University, and continues to research in international trade and economic development, with a focus on how trade impacts the environment.

The purpose of the paper is to test the hypothesis that countries can attract foreign investment through lax environmental regulations, becoming a so-called “pollution haven.” The researchers look at China specifically, and analyze the various levels of investment in provinces with differing environmental regulation and enforcement.

The researchers built a model to evaluate the impact on environmental stringency on FDI based on the decisions firms made on where to locate plants. Data on firms is gathered from a dataset on Chinese joint ventures from 1993-1996, and pollution data is culled from province water pollution levies. The researchers also considered which countries investing into China, and found very different behaviors that depended on the country of the investment’s origin.

Quotes that capture the critical import of the text:

“For the sample of projects with partners from the OECD and other countries, we find no evidence of pollution-haven-seeking behavior by foreign firms. Pollution levies do not significantly deter these partners, regardless of the pollution intensity of the industry. In contrast, projects funded from Chinese sources (Hong Kong, Macao, and Taiwan) are significantly deterred by pollution taxes, regardless of pollution intensity. One possible explanation for this finding, supported by evidence from other studies, is that investment from advanced countries embodies newer technology, implying lower costs for abatement and a higher probability that a given plant will meet standards and avoid taxation.”

“It is clear that FDI is not flowing to provinces with the least stringent regulations.”

“Conditional logit analysis provides some evidence that Chinese-sourced FDI is deterred by relatively stringent pollution regulation, particular in highly polluting industries.”

The text supports my research focus by offering a critical examination of the “pollution haven” theory, which is that the country with the least restrictive environmental laws will take in more foreign investment, incentivizing developing countries to deregulate the environment. The balanced view is crucial to better understanding the issue as whole and not applying blanket statements that do not cover the whole story.

In my post I referenced the lower sensitivity to environmental regulations on FDI from OECD countries, as it provides a unique insight into the problem of offshoring externalities. Additionally, I included the author’s results that the worst polluters were attracted to locations with the most relaxed laws as an example that the “pollution haven” theory is not completely fabricated.